



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,863	11/29/2001	Hiromasa Yagi	MAM-007	2761
20374	7590	10/28/2003	EXAMINER	
KUBOVCIK & KUBOVCIK SUITE 710 900 17TH STREET NW WASHINGTON, DC 20006			TALBOT, BRIAN K	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/995,863	Applicant(s) YAGI ET AL.	
	Examiner Brian K Talbot	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1762

1. The amendment filed 8/11/03 has been considered and entered. Claims 1-13 remain in the application.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. In light of the amendment filed 8/11/03, the 35 USC 112, second paragraph, rejection has been withdrawn.

Claim Rejections - 35 USC § 102

4. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589).

Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589) all disclose enhancing adhesion of composite electrodes onto metal foils (current collectors of nickel) by treating the collectors by chemical etching which roughens the collector's surface. The collector is then coated with the appropriate coating to form the electrode.

The claims fail to positively recite that gaps are formed in the thin film when expanded and shrinkd due to a charge/discharge.

It is the Examiner's position that this "formation of gaps" is inherently produced due to the irregularities of the metal collector and the thin film atop thereon. Hence, the Examiner can

draw no other conclusion that the prior art, which depicts irregularities in the collector and the thin film, would produce such gaps. Furthermore, the specification on pg. 9, lines 2-15, indicated that the gaps are indeed a direct result of the irregularities which is taught by the prior art. If Applicant disagrees, Applicant is to provide a showing contrary to the Examiner's position.

Claims 10-12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Chang (5,542,163) or Satou et al. (6,117,589).

Chang (5,542,163) discloses enhancing adhesion of composite electrodes onto metal foils (current collectors) by treating the collectors by electrolytically depositing metals which roughens the collector's surface (col. 1, line 58 – col. 2, line 12). The collector is then coated with the appropriate coating to form the electrode.

Satou et al. (6,117,589) discloses enhancing adhesion of composite electrodes onto metal foils (current collectors) by treating the collectors by chemical etching and/or abrasive etching which roughens the collector's surface (abstract and Fig. 4). The collector is then coated with the appropriate coating to form the electrode. The abrasive particles have an average size of 75 microns.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1762

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (5,542,163) or Satou et al. (6,117,589).

Chang (5,542,163) or Satou et al. (6,117,589) fail to teach the claimed coating of silicon or silicon/germanium.

While the Examiner acknowledges this fact, both the prior art and instant invention are concerned with lithium batteries and the materials utilized in forming these lithium batteries (including the claimed materials) are commonplace in the art. Hence, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar success utilizing the claimed materials in substitution of the materials disclosed.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589) in combination with Chang (5,542,163).

Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589) fail to teach forming an interlayer to "roughen" the collector's surface.

Chang (5,542,163) teaches applying a metal layer atop the collector's surface to increase the adhesion thereof. The metal can be copper.

Therefore, it would have been obvious for one skilled in the art at the time the invention was made to have modified Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589) process for roughening the collector's surface by substituting one roughening step for another with the expectation of achieving similar success.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589).

Suhara et al. (6,195,251 B1), Kabata et al. (5,900,336), Ohsawa (5,162,178) or Satou et al. (6,117,589) fail to teach the claimed coating of silicon or silicon/germanium.

While the Examiner acknowledges this fact, both the prior art and instant invention are concerned with lithium batteries and the materials utilized in forming these lithium batteries (including the claimed materials) are commonplace in the art. Hence, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar success utilizing the claimed materials in substitution of the materials disclosed.

Response to Amendment

2. Applicant's arguments filed 8/11/03 have been fully considered but they are not persuasive.

Applicant argued that the prior art fails to teach depositing the thin film having irregularities corresponding to the irregularities of the metal foil m(except for Osawa).

The Examiner disagrees. All the prior art teaches etching a collector metal foil and depositing a thin film electrode on the surface thereof. It is the Examiner's position that the thin film would result in a "topography" similar to that of the etched metal foil as the references are silent with respect to forming a "planar or level" coating.

Applicant argued that the prior art fails to teach forming gaps in the thin film as a result of a charge/discharge.

This has been addressed above.

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 1762

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (703) 305-3775. The examiner can normally be reached on Monday-Friday 6AM-3PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3775.



Brian K Talbot
Primary Examiner
Art Unit 1762

BKT
October 21, 2003